

Magnitude and precision of Marine Recreational Fishery Statistics Survey (MRFSS)  
estimates of the recreational catch of winter flounder and Atlantic cod

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TOR G. Recreational Landings and Discards.

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## **Recreational Fishery Landings and Discards**

For the stocks considered in the GARM, only winter flounder and Atlantic cod have significant recreational catch. The magnitude of the landings (catch types A+B1) and live discards (catch type B2) of the recreational fisheries are estimated by the National Marine Fisheries Service (NMFS) Marine Recreational Fishery Statistics Survey (MRFSS). The MRFSS consists of two complementary surveys: a field intercept survey of anglers to estimate catch rates, and a phone survey of coastal households to estimate total recreational fishing effort. Data from these complementary surveys are combined to estimate catch. The following tables provide information of the magnitude and precision of MRFSS estimates of landings (numbers of fish, and weight of fish in kilograms) and live discards (numbers of fish) of winter flounder and Atlantic cod, for all stocks. Estimates of the precision of the landings and discards are expressed as Proportional Standard Error (standard error of the estimate as a percentage of the estimate).

The PSE of landings in numbers of winter flounder has ranged from 8.2% (1990, 1992) to 28.3% (1993; Table 1). The PSE of landings in weight has ranged from 8.2% (1992) to 27.5% (2005; Table 1). The PSE of the live discards in numbers has ranged from 9.0% (1990) to 45.3% (1989; Table 2).

The PSE of landings in numbers of Atlantic cod has ranged from 9.0% (1984, 2001, 2006) to 37.3% (1985; Table 3). The PSE of landings in weight has ranged from 10.1% (1989) to 56.2% (1985; Table 3). The PSE of the live discards in numbers has ranged from 7.5% (2006) to 57.7% (1981; Table 4).

Table 1. Atlantic Coast Winter Flounder (GOM + SNE/MA stocks): Landings

NUMBERS OF FISH			WEIGHT OF FISH (KG)			PSE (%)
Year	HARVEST (TYPE A + B1)	PSE (%)	Year	Weight (TYPE A + B1)	(%)	
1981	13,685,828	9.5	1981	5,635,628	10.1	
1982	15,489,923	20.7	1982	7,446,888	27.0	
1983	10,282,272	9.2	1983	4,372,894	9.8	
1984	14,726,608	10.3	1984	6,875,090	11.0	
1985	16,306,302	15.7	1985	6,973,025	14.9	
1986	7,692,315	12.2	1986	3,463,174	10.9	
1987	9,247,711	9.6	1987	4,974,682	9.9	
1988	8,195,664	9.5	1988	3,982,538	10.4	
1989	5,477,269	18.3	1989	2,432,802	12.3	
1990	3,138,767	8.2	1990	1,431,724	8.9	
1991	2,961,807	10.6	1991	1,315,196	10.1	
1992	946,075	8.2	1992	486,045	8.2	
1993	2,127,416	28.3	1993	966,011	22.2	
1994	1,347,590	13.7	1994	679,015	12.8	
1995	1,430,421	11.1	1995	693,820	11.9	
1996	1,704,274	13.0	1996	797,001	12.3	
1997	1,283,969	13.2	1997	687,036	11.9	
1998	648,193	15.4	1998	325,576	15.4	
1999	723,630	13.7	1999	348,388	13.7	
2000	1,459,446	17.5	2000	916,665	18.6	
2001	963,701	13.6	2001	591,514	13.6	
2002	469,390	17.9	2002	264,695	17.4	
2003	623,698	14.0	2003	350,990	13.4	
2004	384,955	14.1	2004	216,531	17.1	
2005	246,064	22.6	2005	128,504	27.5	
2006	308,995	23.5	2006	164,725	23.8	

Table 2. Atlantic Coast Winter Flounder (GOM + SNE/MA stocks): Live Discards

NUMBERS OF FISH

Year	RELEASED ALIVE (TYPE B2)	PSE (%)
1981	3,773,578	14.9
1982	3,096,609	31.2
1983	2,880,484	12.8
1984	5,159,654	13.4
1985	5,259,514	17.6
1986	2,591,783	13.7
1987	3,021,575	12.5
1988	2,922,411	12.7
1989	2,590,611	45.3
1990	1,493,024	9.0
1991	1,599,900	15.2
1992	597,754	14.7
1993	1,454,472	19.5
1994	951,990	16.5
1995	859,364	13.2
1996	1,134,052	20.9
1997	829,953	16.0
1998	469,043	19.7
1999	456,010	15.0
2000	814,175	22.8
2001	629,648	13.8
2002	339,676	19.1
2003	223,586	14.4
2004	117,251	19.4
2005	306,745	21.0
2006	352,730	20.7

Table 3. Atlantic Coast Atlantic Cod (GOM + GBK stocks): Landings

NUMBERS OF FISH			WEIGHT OF FISH (KG)		
Year	HARVEST (TYPE A + B1)	PSE (%)	Year	Weight (TYPE A + B1)	PSE (%)
1981	4,433,216	17.4	1981	8,039,781	18.7
1982	3,335,918	19.0	1982	9,767,674	20.8
1983	2,945,918	13.4	1983	6,615,108	20.1
1984	1,369,783	9.0	1984	2,694,257	11.3
1985	3,524,977	37.3	1985	10,468,330	56.2
1986	1,283,999	14.7	1986	3,414,286	32.6
1987	2,488,377	18.0	1987	4,076,613	18.2
1988	2,402,091	17.4	1988	5,490,967	15.0
1989	1,596,979	11.2	1989	3,225,086	10.1
1990	1,709,890	12.4	1990	3,588,437	14.8
1991	1,752,138	15.3	1991	4,221,544	16.6
1992	525,342	13.8	1992	1,059,371	15.7
1993	1,527,237	12.7	1993	3,238,240	13.6
1994	818,859	10.0	1994	1,943,859	24.3
1995	1,021,554	16.7	1995	2,191,747	14.6
1996	500,073	14.5	1996	1,385,753	18.2
1997	473,579	21.5	1997	1,189,188	23.9
1998	465,658	20.8	1998	1,345,907	23.9
1999	375,185	20.5	1999	1,179,186	24.0
2000	812,285	14.1	2000	2,327,686	15.5
2001	1,117,649	9.0	2001	3,199,612	10.9
2002	644,339	11.8	2002	2,030,900	15.8
2003	707,374	9.4	2003	2,451,693	17.6
2004	667,297	10.8	2004	1,738,640	16.2
2005	732,234	18.3	2005	1,540,714	14.2
2006	266,956	9.0	2006	873,825	13.0

Table 4. Atlantic Coast Atlantic Cod (GOM + GBK stocks): Live Discards

NUMBERS OF FISH		
Year	RELEASED ALIVE (TYPE B2)	PSE (%)
1981	247,955	57.7
1982	147,795	23.0
1983	393,997	19.5
1984	227,041	19.3
1985	289,886	31.2
1986	183,848	15.9
1987	608,422	38.2
1988	406,623	16.8
1989	739,149	13.2
1990	601,500	11.4
1991	503,184	21.4
1992	324,627	14.9
1993	1,165,572	15.3
1994	1,042,505	11.7
1995	970,614	18.2
1996	548,702	15.4
1997	515,917	16.1
1998	693,412	19.1
1999	582,917	19.5
2000	1,213,410	16.6
2001	1,381,342	9.7
2002	1,142,539	11.3
2003	1,176,174	11.4
2004	999,296	12.5
2005	1,753,393	17.1
2006	807,131	7.5